AMENDMENT TO THE CLAIMS

1. (Original) A method of clustering a plurality of network

destinations having network addresses being partitioned into

groups of network addresses according to an initial grouping,

comprising:

identifying a plurality of seedpoints from among the network

destinations, each seedpoint being an active one of the

destinations associated with at least one of the groups of network

addresses;

topologically clustering the seedpoints into groups of

topologically similar seedpoints;

performing a measurement from a predetermined location to a

seedpoint within each group of seedpoints;

clustering the seedpoints into clusters based on the

measurements, the clusters being selected in a manner achieving a

desired trade-off between the number of clusters and the

similarity among the measurements for the seedpoints within each

cluster; and

generalizing the clusters based on information identifying

the network addresses with corresponding seedpoints to which the

network addresses are deemed close.

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(Original) A method according to claim 1, wherein the

seedpoints are identified based on a predetermined desired

granularity.

(Original) A method according to claim 2, wherein

predetermined desired granularity is expressed as a number of most

significant bits of the destination addresses.

(Original) A method according to claim 3, wherein

destination addresses are 32 bits in length, and the predetermined

number of most significant bits is 24.

5. (Original) A method according to claim 1, wherein the density

of the seedpoints in different groups is varied based upon traffic

statistics.

(Original) A method according to claim 1, wherein

seedpoints are identified based on information concerning the

destinations of data traffic in the network.

(Original) A method according to claim 1, wherein

seedpoints are identified by sending a message to at least one

address in each of a complete set of address regions spanning the

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destination addresses, each region being defined by a

corresponding unique pattern of most significant address bits.

8. (Original) A method according to claim 7, wherein the one

address in each of the address regions is one of a set of

predetermined addresses within each region to which messages are

conditionally sent to identify seedpoints.

9. (Original) A method according to claim 1, wherein the

seedpoints are included in autonomous systems, and further

comprising selecting a representative for each cluster of

seedpoints, the selecting of a representative including

determining whether the representative has the same penultimate

hop along a path to the autonomous system as do the seedpoints of

the cluster.

10. (Original) A method according to claim 9, wherein identifying

seedpoints includes rejecting those seedpoints for which there is

no available representative in the same autonomous system.

11. (Original) A method according to claim 1, wherein

topologically clustering comprises performing traceroute

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operations to the seedpoints and analyzing the resulting reported

routes.

12. (Original) A method according to claim 1, wherein the

measurement performed from the predetermined location to each of

the seedpoints is one of multiple measurements performed from the

predetermined location to each of the seedpoints.

13. (Original) A method according to claim 1, wherein the

predetermined location is one of multiple predetermined locations

from which measurements to the seedpoints are performed.

14. (Original) A method according to claim 1, wherein performing

each measurement comprises sending a time-to-live-limited probe

message to a candidate seedpoint.

15. (Original) A method according to claim 1, wherein performing

each measurement comprises sending an echo request message to a

candidate seedpoint.

16. (Original) A method according to claim 1, wherein the

measurements are temporal measurements.

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17. (Original) A method according to claim 1, wherein clustering

the seedpoints includes ordering the seedpoints according to the

measurement.

18. (Original) A method according to claim 17, further comprising,

for each cluster of ordered seedpoints, identifying at least one

of the seedpoints whose measurement satisfies a predetermined

criterion.

19. (Original) A method according to claim 18, wherein the

predetermined criterion is being closest to a centroid of the

measurements of the seedpoints.

20. (Original) A method according to claim 1, wherein clustering

the seedpoints is performed on the basis of autonomous systems in

which the seedpoints reside.

21. (Original) A method according to claim 20, wherein a minimum

of one cluster is established per autonomous system.

22. (Original) A method according to claim 1, wherein clustering

the seedpoints is performed on the basis of traffic to the network

destinations.

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23. (Original) A method according to claim 1, wherein clustering

the seedpoints is performed in at least two passes, a first pass

resulting in more clusters than desired, a second pass being based

on a subset of the seedpoints taken from larger ones of the

clusters resulting from the first pass.

24. (Original) A method according to claim 1, wherein clustering

the seedpoints is based on geographical information about the

seedpoints.

25. (Original) A method according to claim 1, wherein clustering

the seedpoints employs a clustering budget of a predetermined

number of clusters for each of a predetermined fraction of the

total number of seedpoints.

26. (Original) A method according to claim 1, wherein the clusters

are non-overlapping.

27. (Original) A method according to claim 1, wherein generalizing

the clusters results in associating multiple groups of network

addresses with each of at least some of the clusters.

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28. (Original) A method according to claim 1, further comprising

for each cluster, selecting a representative having a

predetermined relationship to the seedpoints of the cluster, and

associating the representative with each group of network

addresses associated with the cluster.

29. (Original) A method according to claim 28, wherein the

predetermined relationship of each representative to the

seedpoints of the associated cluster is a predetermined

relationship of the representative to a centroid of the

seedpoints.

30. (Original) A method according to claim 28, wherein the

predetermined relationship of each representative to the

seedpoints of the associated cluster comprises lying along a

network path to a selected one of the seedpoints.

31. (Original) A method according to claim 28, wherein selecting a

representative for the seedpoints of each cluster includes

discarding candidate representatives that do not respond to

messages.

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32. (Original) A method according to claim 28, wherein selecting a

representative for the seedpoints of each cluster includes

discarding candidate representatives that respond to messages with

high variability.

33. (Original) A method according to claim 32, wherein thresholds

are employed in ascertaining higher-than-acceptable variability,

each threshold being associated with a corresponding source of

network traffic.

(Original) A method according to claim 28, wherein the

representatives are used by an intelligent route controller to

select paths for traffic to the destinations, the intelligent

controller being operative to (1) perform periodic route

measurements to each of the representatives via different

connections of the intelligent route controller, and (2) on the

basis of the periodic measurements to the representatives,

conditionally modify which of the connections is used for traffic

sent to the network destinations.

35. (Original) A method according to claim 1, wherein the initial

grouping of network addresses is established by a set of address

prefixes.

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36. (Original) A method according to claim 35, wherein the address

prefixes are also employed to establish closeness

generalizing step.

37. (Original) A method according to claim 35, wherein the address

prefixes reside in a routing table.

(Original) A method of clustering a plurality of network

destinations having addresses spanned by a set of

prefixes, comprising:

identifying a plurality of seedpoints from among the network

destinations, each seedpoint being an active one οf

destinations associated with a corresponding at least one of the

address prefixes;

groups of topologically clustering seedpoints into the

topologically similar seedpoints;

performing a measurement from a predetermined location to a

seedpoint within each group of seedpoints;

clustering the seedpoints into clusters based

measurements, the clusters being selected in a manner achieving a

desired trade-off between the number of clusters and the

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similarity among the measurements for the seedpoints within each

cluster;

generalizing the clusters based on the address prefixes, the

generalizing including conditionally modifying the set of address

prefixes such that each address prefix in the conditionally

modified set of address prefixes is associated with a

corresponding single one of the clusters.

39. (Original) A method according to claim 38, wherein the density

of the seedpoints in different address prefixes is varied based

upon traffic statistics.

40. (Original) A method according to claim 38, wherein

generalizing the clusters includes associating each seedpoint with

the longest one of those address prefixes matching the seedpoint.

41. (Original) A method according to claim 38, wherein

generalizing the clusters results in associating multiple address

prefixes with each of at least some of the clusters.

42. (Original) A method according to claim 38, wherein

conditionally modifying the set of address prefixes comprises

recursively splitting each address prefix that matches seedpoints

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from multiple clusters until each resulting address prefix matches

seedpoints from only one cluster.

43. (Original) A method according to claim 38, wherein

conditionally modifying the set of address prefixes comprises

recursively merging address prefixes having greater granularity

than the address prefixes in the set of address prefixes until any

further merging would result in associating at least one address

prefix with seedpoints of multiple clusters.

44. (Original) A method according to claim 38, further comprising

for each cluster, selecting a representative having a

predetermined relationship to the seedpoints of the cluster, and

associating the representative with each address prefix associated

with the cluster in the conditionally modified set of address

prefixes.

45. (Original) A method according to claim 44, wherein the

predetermined relationship of each representative to the

seedpoints of the associated cluster is a predetermined

relationship of the representative to a centroid of the

seedpoints.

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(Original) A method according to claim 44, wherein the

predetermined relationship of each representative the

seedpoints of the associated cluster comprises lying along a

network path to a selected one of the seedpoints.

47. (Currently Amended) A method according to claim 44, wherein

selecting a representative for the seedpoints of each cluster

includes discarding candidate representatives that

respond to messages.

48. (Original) A method according to claim 44, wherein selecting a

representative for the seedpoints of each cluster includes

discarding candidate representatives that respond to messages with

high variability.

49. (Original) A method according to claim 48, wherein thresholds

are employed in ascertaining higher-than-acceptable variability,

each threshold being associated with a corresponding source of

network traffic.

50. (Original) A method according to claim 44, wherein the

representatives are used by an intelligent route controller to

select paths for traffic to the destinations, the intelligent

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route controller being operative to (1) perform periodic measurements to each of the representatives via different connections of the intelligent route controller, and (2) on the basis of the periodic measurements to the representatives, conditionally modify which of the connections is used for traffic sent to the network destinations.